

Notes on the Biology and Distribution of a Rare Jewel Beetle *Pseudotaenia waterhousei* (Van de Poll) (Coleoptera: Buprestidae).

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Abstract

Notes on the general biology and distribution of *Pseudotaenia waterhousei* (Van de Poll) (Buprestidae) are described from material collected from the Dunmore State Forest, central south-east Queensland (c. 27°40'S, 150°50'E). The beetle is very rare and nearing extinction. Recommendations for conservation of the species in Queensland are proposed.

Introduction

The genus *Pseudotaenia* Kerremans belongs to the sub-family Chalcophorinae, tribe Chalcophorini (Buprestidae) (Carter, 1929) and contains eight species (Carter, 1921, 1929). The genus is endemic and mainly found in drier areas of northern Australia. Adults are large metallic, blue to blue-green beetles, 30-45 mm in length, and often adorned with a yellow powdery substance resembling pollen. As is the case with other genera of the Australian Chalcophorinae (i.e. *Chrysodema* Laporte & Gory, *Chalcotaenia* Deyrolle, *Cyphogastra* Deyrolle, *Iridotaenia* Deyrolle and *Paracupta* Deyrolle), specimens of *Pseudotaenia* Kerremans are rare in museum collections and little is known of their biology. Hence any detailed studies of any members of the group should add significantly to present knowledge.

Recent field work by Mr M. De Baar and his colleagues from the Department of Forestry, Indooroopilly, Brisbane, has resulted in the location of a small population of *P. waterhousei* (Van de Poll) (Fig. 1). Since the species appears

not to have been collected from this area of Queensland for over 45 years, the last specimens being from Chinchilla in 1937, De Baar's collections virtually represent a rediscovery of the taxon. The enthusiasm shown by Messrs De Baar and M. Hockey has prompted the author to provide details on our present knowledge of the biology and distribution of the species.

Notes on adult behaviour

The following notes were provided by De Baar from observations and collections he made in the Dunmore State Forest via Dalby (c. 27°40'S, 150°50'E) during December 1980. Adults of *P. waterhousei* were usually found resting about one metre above ground level on the main trunks of *Acacia leiocalyx* (Domin) Pedley (Mimosaceae). No adults were observed on the minor branches or leaves. The beetles were particularly active in hot weather (30-35°C) and if disturbed, usually flew upwards and landed on the tops of nearby trees (other than *Acacia*) and later returned to the trunks of *A. leiocalyx*. When in flight adults produced a loud buzzing sound. Although species of *Eucalyptus* and *Angophora* (both Myrtaceae) were flowering at the time and attracted numerous beetles including other Buprestidae, no *P. waterhousei* were observed visiting the blossoms. *Acacia leiocalyx* was not flowering at the time. Many buprestids are obligate leaf-feeders, but feeding of *P. waterhousei* on *Acacia* leaves was not observed. Some females were observed ovipositing in fissures in the *Acacia* trunks.

These observations suggest that adults do not feed on flowers or nectar of *A. leiocalyx* and probably do not feed on

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Acacia leaves either. Many insects which do not feed in the adult stage have short adult life-spans. It is most likely that the life-span of the adult *P. waterhousei*, after emergence from the host timber, is short, i.e. 10 days or less. One to two weeks after emergence is the average adult life-span of some Australian buprestids (Hawkeswood, 1975-77, unpublished data). All stages of this beetle's life-cycle are strongly associated with *A. leiocalyx*, with egg-laying, and probably mating, being restricted to sites on the main trunks.

Log billets with suspected infestations by beetles, either Buprestidae and/or Cerambycidae, were brought back to the

laboratory in Brisbane and three last-instar larvae of *P. waterhousei* were obtained from the wood as well as a number of adults. The record of this *Acacia* as a larval host has been previously made from data supplied by De Baar (Hawkeswood and Peterson, 1982, p.242).

Brief description of the adult (Fig. 1)

Male and female: Body elongate, robust, large-sized, convex; head, pronotum, scutellum, elytra, legs and undersurface of body dark metallic purple-blue; eyes and antennae black. Pronotum and elytra with metallic green to dark blue reflections; elytra (except



Fig. 1. Adult of *Pseudotaenia waterhousei*. (Photo, M. Peterson).

(for costae), pronotum and undersurface, irregularly covered (in fresh examples) in a pollinose material which, on sternites is restricted to the margins. Size: ♂ 40.4 + 5.0 mm × 13.1 + 2.0 mm (8 specimens).

♀ 44.4 + 2.0 mm × 15.8 + 1.0 mm (5 specimens).

Distribution

The collections of *P. waterhousei* in the various Australian museums are somewhat small. In most cases, adult specimens are old, discoloured, worn and without the yellow pollinose material usually present on fresh examples. The collection data accompanying them are usually meagre and often non-existent. However, the data that are available, suggest that the species is confined to central south-east Queensland with a probable extension to central New South Wales. The distribution is shown in Fig. 2.

Details of collections in various institutions are given below. Abbreviations are as follows: — ANIC — Australian National Insect Collection, CSIRO, Canberra; QM — Queensland Museum, Brisbane; QDI — Queensland Department of Forestry, Brisbane; NMV — National Museum of Victoria, Melbourne; SAM — South Australian Museum, Adelaide). There appear to be no collections of *P. waterhousei* in the Western Australian Museum, Perth, the Australian Museum, Sydney or the Queensland Department of Primary Industries Collection, Brisbane.

Museum material: *Queensland*: 2♂ & 1♀, Chinchilla, Jan. 1937, F. A. Cole (QM); 1♀, Chinchilla (NMV); 1♀, Rockhampton (NMV); 1♀, Duaringa (SAM); 4♀ & 7♂, Dunmore State Forest via Dalby, 23 Dec. 1980, F. R. Wylie & M. De Baar (QDF); 1♀, Dunmore S. F., 22 Dec. 1981, M. De Baar & M. Hockey (QDF); 1♀, Dunmore S. F., 31 Jan. 1982, M. J. Hockey (QDI); Emerged material — 1♂, em. 24 Nov.

1980, M. De Baar & F. R. Wylie; 1♂, em. 31 Nov. 1980, M. De Baar & M. Hockey; 1♀, em. 1 Dec. 1980, M. De Baar & M. Hockey; 1♀, em. 8 Dec. 1980, M. De Baar & M. Hockey; 1♂, em. 6 Jan. 1982, F. R. Wylie & M. De Baar (All from the Dunmore State Forest in log billets and now housed in QDF); 1♀ & 1♂, "Qld" (SAM); 5♀, "Qld" (NMV); 2♀ & 1♂, no data (UQ); 1♀, no data (QM); 1♂, E. Sutton coll. (QM).

New South Wales: 1♀, Bimbi (ANIC); 1♂ & 1♀, Dubbo (ANIC).

Conservation

P. waterhousei appears to be a very rare beetle probably destined for extinction unless efforts are made in the near future to preserve it. Its status in previously collected localities, with the exception of the Dunmore State Forest,

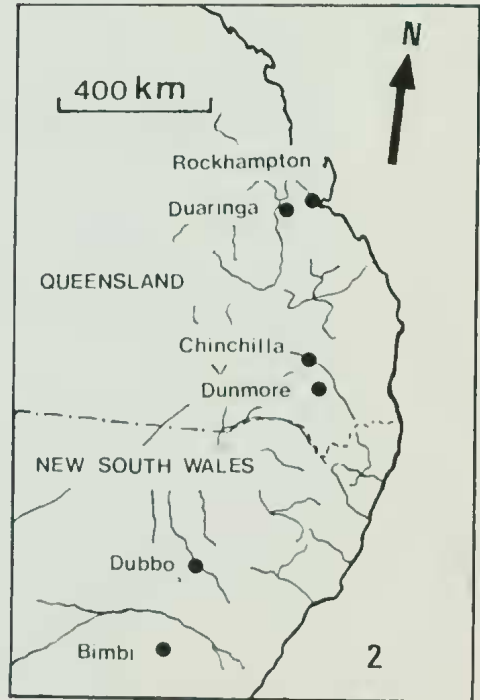


Fig. 2 Distribution of *Pseudotaenia waterhousei* based on museum collections.

is not known with any certainty due to lack of recently collected specimens. However, it is likely that the species is now extinct in New South Wales since there are no recent collections from there. The *Acacia* scrubs have been extensively cleared for agriculture for a long period of time, and the specimens in ANIC, the only three known from this State, are extremely old and probably collected late last century or earlier when their habitat, the brigalow zone, was relatively unmodified by Man.

Mr E. E. Adams, a well-known and long-time collector of Coleoptera in the Edungalba-Rockhampton area informs me (1982, pers. comm.) that *P. waterhousei* is almost extinct in that area. It appears that the species was scarce there in the past, probably existing as small, isolated populations, and therefore vulnerable to the effects of large-scale land clearing.

The Chinchilla specimens are also old. Two extensive visits to the Chinchilla — Barakula State Forest area by the author during Nov. 1982 and Jan. 1983, failed to procure any specimens, either alive or dead, although the food plant, *A. leiocalyx* was abundant in several areas. However the weather was dry and hot and there was little rain during the previous winter, weather conditions which were probably not conducive to the emergence of the beetles, if in fact the species does occur there.

My personal view is that *P. waterhousei* is extinct in N.S.W., is nearing extinction in the northern part of its range (Rockhampton area) and is rare and sporadic in the central portion of its distribution (Chinchilla-Dalby area). At Dunmore the species occurs in *A. leiocalyx* thickets on rocky hilltops and slopes, usually away from areas

where *Callitris* Pine (*Callitris columellaris*) (Cupressaceae) are grown and harvested for commercial use. Bush fires, at the moment, would appear to be the main threat to its survival at this locality. However, I would recommend that special areas in which populations are known to occur (i.e. in the Dunmore State Forest), should be set aside as conservation reserves, and further research should be undertaken to locate further populations if they still exist.

Acknowledgements

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REFERENCES

- Carter, H. J. (1921). Australian Coleoptera: notes, and new species I. *Proc. Linn. Soc. N.S.W.* 46: 301-323.
- Carter, H. J. (1929). A checklist of the Australian Buprestidae. *Aust. Zool.* 5: 265-304.
- Hawkeswood, T. J. and Peterson, M. (1982). A review of larval host records for Australian jewel beetles (Coleoptera: Buprestidae). *Victorian Nat.* 99: 240-251.